SIEMENS

ARCADIS Avantic

SP

Startup

System

Start-up Instructions

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Table of Contents 3

1 General Information 5

Notes and symbols . . . 5
Additionally Required Documents . . . 7
Safety information . . . 8
General safety information (in existing documents) . . . 8
General electrical safety information . . . 8
Radiation safety information . . . 9
Systems equipped with an I.I. laser light localizer or a single tank laser light localizer. . . . 10
Systems equipped with an integrated I.I. laser light localizer . . . 10
Information on the protective conductor resistance test . . . 11
System leakage current measurement information . . . 13
Tools, aids (partially for IQ test) . . . 19
Note on the log book . . . 20
Notes on adapting the power plug to local conditions . . . 21
Note on the power connection . . . 22

2 General Startup 23

Power Connection . . . 23
Measuring the local line voltage . . . 23
Adapting the programmed system line voltage . . . 23
Function check of the EMERGENCY STOP switches . . . 25
Functional checks . . . 26
Functional test of C-arm lift movement and parking brakes . . . 27

3 Specific System Settings 28

System configuration . . . 28
Note regarding Hibernation Mode . . . 28
Customer and country-specific configurations . . . 28
Service login: . . . 28
Customer address configuration . . . 30
Main system configuration . . . 33
Fluoroscopy footswitch configuration . . . 36
Country-specific adaptation of the maximum tube current . . . 37
Configuring the network (optional) and remote service . . . 40
Backup . . . 41

4 Final Work Steps 45

Paper printer (optional) . . . 45
Codonics printer 1660L . . . 45
Sony printer UP-D72 X . . . 45
Sony Printer UP-970 and UP-990 . . . 45
Final Work Steps . . . 46
IQ test . . . 46
Completing protocols . . . 46

Protective conductor resistance test 46
Leakage current measurement 49
Completing the "ARCADIS Avantic Installation" protocol. 51

5 Protocols 52

Protective Conductor Resistance 52
Measuring circuit 54
Remarks: 54
System leakage current 56
Measuring circuit 57
Remarks: 59
C-arm movement and emergency stop 60
Network checklist 61

6 Changes to Previous Version 65

Notes and symbols

Emphasized text in this technical documentation has the following meanings:

Tab. 1 GEFAHR / DANGER

GEFAHR	Bei einer unmittelbar drohenden Gefahr, die bei Nichtvermeidung zum Tod oder zu einer schweren Körperverletzung **führt**.
DANGER	Indicates when there is an immediate danger that **leads** to death or serious physical injury.

Tab. 2 WARNUNG / WARNING

WARNUNG	Bei einer Gefahr, die bei Nichtvermeidung zum Tod oder zu einer schweren Körperverletzung **führen kann**.
WARNING	Indicates a risk of danger that **may lead** to death or serious physical injury.

Tab. 3 VORSICHT / CAUTION

VORSICHT	Bei einer Gefahr, die bei Nichtvermeidung zu einer leichten oder mittleren Körperverletzung und/ oder zu einer Sachbeschädigung führt oder führen kann.
CAUTION	Indicates a risk of danger that leads to slight or moderate physical injury and/or damage to property.

Tab. 4 ACHTUNG / NOTICE

ACHTUNG	Bei einer Gefahr, die bei Nichtvermeidung zu einem unerwünschten Ergebnis oder Zustand führt oder führen kann (**nicht** Tod, Körperverletzung oder Sachbeschädigung).
NOTICE	Indicates a risk of danger that if disregarded leads or may lead to a potential situation which may result in an undesirable result or state (**not** death, physical injury or property damage).

Tab. 5 HINWEIS / NOTE

HINWEIS	Ist als Tipp zu verstehen. Der Anwender muss diese Anweisung nicht unbedingt beachten. Er erfährt jedoch Vorteile, wenn er dies tut.
NOTE	Should be understood as a tip. The user does not absolutely have to observe these instructions. However, there will be advantages if he does.

Additionally Required Documents

- ARCADIS Avantic Operator Manual
- ARCADIS Avantic Wiring Diagram
- IQ test (quality assurance)
- Local printer (optional) assembly and setting instructions
- Image intensifier laser light localizer (optional) assembly and setting instructions

Safety information

General safety information (in existing documents)

⚠WARNING

Danger of injuries, death or material damage.

Non-compliance can lead to death, injury or material damage.

Please note:

- **➪ The product-specific safety information in these instructions,**
- **➪ The general safety information in TD00-000.860.01... and**
- **➪ The safety information in accordance with ARTD Part 2.**

General electrical safety information

⚠WARNING

Electrical safety!

Non-compliance can lead to severe injury or even death, as well as material damage.

- **➪ Parts under electrical voltage are accessible when the covers are open. To avoid danger, disconnect the system from the power supply before opening the covers. Disconnect the power plug.**
- **➪ If an uninterruptible power supply (UPS) is installed in the system, the voltage output of the UPS must also be deenergized or the voltage output plug must be disconnected.**
- **➪ If work steps must be performed using electrical power, the general safety information according to TD00-000.860.01... must be observed.**

Avantic basic unit

⚠WARNING

Danger, high voltage!

Disregarding safety precautions can result in death or serious bodily injury.

- **Even after the system has been switched off - and for an extended period afterward, voltage is still present in the electrolyte condenser battery and the generator boards (D20, D21 and D30).**
- **Before work is started on the electrolyte condenser battery, it must must be discharged.**
- **To do this, switch D21.S2 must be set to the UZ_OFF position; LEDs D21.X22 and D21.X23 must not continue to glow.**
- **Then the voltage between points X109.UZ_IST(ACT) and X109.ANA_GND is measured. The voltage must be ≤0.2V (corresponding to Uz < 20V⎓).**

Radiation safety information

⚠WARNING

X-ray radiation!

Non-compliance can lead to illness, irreversible damage to body cells and the genotype, severe injury and even death.

During work on the system in which radiation must be released, the radiation protection directives and the rules for radiation protection according to ARTD-002.731.02.. must be complied with.

Please note:

- **Use available radiation protection devices.**
- **Wear radiation protection clothing (lead apron).**
- **Stay as far away as possible from the radiation source.**
- **Release radiation only if necessary.**
- **Set the radiation activity as low as possible. (low kV and mA values, short radiation time)**
- **Release radiation for as short a time as possible.**
- **Checks requiring the release of radiation are identified by the radiation warning symbol shown on the left.**

Systems equipped with an I.I. laser light localizer or a single tank laser light localizer

⚠CAUTION

Laser emissions!

This product contains class 2 lasers. (USA: Laser class 2)

Disregarding safety precautions can lead to bodily injury, especially to the retina of the eye, resulting in irreversible damage to vision.

- ➪ **Observe the safety information in ARTD-002.731.03... When working with the laser light localizer, do not look directly into the laser beam.**

NOTE

Laser emissions!

There is no direct hazard to the eye (blinking reflex). Nevertheless do not look directly into the laser beam.

Systems equipped with an integrated I.I. laser light localizer

⚠CAUTION

Laser emissions!

This product contains lasers of the class 1M.

Disregarding safety precautions can lead to bodily injury, especially to the retina of the eye, resulting in irreversible damage to vision.

- ➪ **Observe the safety information in ARTD-002.731.03... When working with the laser light localizer, do not view the laser beams directly with optical instruments.**

Information on the protective conductor resistance test

Observe the instructions in the "Safety Rules for Installation and Repair" (ARTD-002.731.17 ...).

The protective conductor resistance of 0.2 ohms must not be exceeded.

First measured value

In the case of systems thoroughly tested at the factory prior to delivery, the protective conductor resistance test was already performed and the measured values were recorded in the system test protocol.

The measurements were performed using the measuring procedures and equipment recorded in the system test protocol.

The test protocol is included with the accompanying documentation.

If no covers were opened while installing the system and no additional components (e.g. options) were installed or modified, the values recorded in the test protocol including the measuring point (e.g. cover of the basic unit or cover of the image intensifier) can be transferred in the protective conductor resistance protocol as the first measured values.

If the power plug was changed during system installation, covers were removed, or additional components were installed or modified, the values provided in the test protocol are invalid.

The values must be labeled invalid. Cross out the values, enter the comment "invalid value" and confirm this with name, date, and signature.

The protective conductor test must be performed again after all work has been completed.

In the case of systems with no measured values for the protective conductor test recorded in the system test protocol, the protective conductor test must be performed after all work has been completed.

Measurement

The measurement must be performed in accordance with DIN VDE 0751, Part 1 (refer to ARTD Part 2). The protective conductor resistance for all touchable conductive parts must be measured during the normal operating state of the system.

Make sure that control cables or data cables between the components of the system are not mistaken for protective conductor connections.

During the measurement, the power cable and additional connection cable with the integrated protective conductor (e.g., monitor cable between the basic unit and monitor trolley) must be moved section by section to detect cable breaks.

The protective conductor resistance must not exceed 0.2 ohms.

The values, including the measuring points, must be recorded as first measured values in the protective conductor resistance protocol.

The measuring procedure and the measuring device used (designation and serial number) must also be documented.

Separate the page with the protocol from these instructions and file it in the "Protocols" register in the system binder or log book.

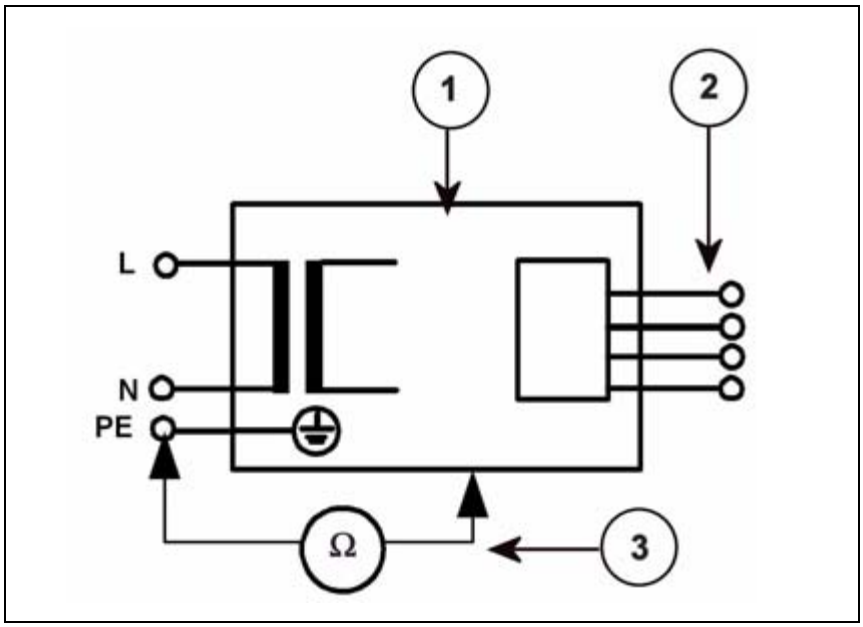

Fig. 1: Measuring circuit for measuring the protective conductor resistance for units that are

disconnected from power, in compliance with DIN VDE 0751-1/2001-10, Fig. C2.

Pos. 1 = System

Pos. 2 = Application part type B (if available)

Pos. 3 = Measurement setup (integrated into measuring device)

Repeat measurement

In the case of maintenance or repairs, perform the protective conductor resistance measurement again.

Document and evaluate the values determined in the repeat measurement.

The measurement must be performed in accordance with DIN VDE 0751, Part 1 (refer to ARTD Part 2). The protective conductor resistance for all touchable conductive parts must be measured during the normal operating state of the system.

Make sure that control cables or data cables between the components of the system are not mistaken for protective conductor connections.

During the measurement, the power cable and additional connection cables with the integrated protective conductor (e.g. monitor cable between the basic unit and monitor trolley) must be moved section by section to detect cable breaks.

The protective conductor resistance must not exceed 0.2 ohms.

The values determined in the repeat measurement, including the measuring points, must be recorded and evaluated in the protective conductor resistance protocol.

The measuring procedure and the measuring device used (designation and serial number) must also be documented.

NOTE

For evaluation purposes, the first measured value and the values documented during previous maintenance or safety checks must be compared to the measured values. A sudden or unexpected increase in the measured values may indicate a defect in the protective conductor connections (protective conductor or contacts) - even if the limit value of 0.2 ohms is not exceeded.

System leakage current measurement information

Observe the instructions in the "Safety Rules for Installation and Repair" (ARTD-002.731.17 ...).

⚠WARNING

Electrical voltage!

Non-compliance can lead to severe injury and even death.

➪ **The system leakage current measurement may be performed on systems of protection class I only after the protective conductor test has been passed.**

First measured value

In the case of systems thoroughly tested at the factory prior to delivery, the system leakage current measurement was already performed at the factory and the measured value was recorded in the system test protocol.

The measurement was performed using the line voltage and line frequency, the measuring procedure, and the measuring equipment recorded in the system test protocol.

The test protocol is included with the accompanying documentation.

When the line voltage and line frequency match, the value recorded in the test protocol must be used as the first measured value in the leakage current protocol.

If the local line voltage or line frequency differs from the delivery state of the system or if no measurement was performed and recorded at the factory, the system leakage current must be measured.

If the local line voltage or line frequency differs from the delivery state of the system, the values listed in the test protocol are invalid.

The values must be labeled invalid. The reason for newly determining the first measured value must be documented and confirmed with date, name, and signature.

Adjust/program the system to the local line voltage/line frequency before the measurement.

In the case of systems without a system leakage current measurement value recorded in the system test protocol, the system leakage current measurement must be performed after all work has been completed.

Measurement

Perform the measurement according to DIN VDE 0751, Part 1 (see ARTD-002.731.17....), and record the determined value as the first measured value.

Measurement of the system leakage current according to the differential current method (measurement setup according to (Fig. 2 / p. 15)) must be given preference, since this method is not dangerous to the person performing the measurement and other persons.

However, please note the minimum resolution of the system leakage current measuring device and any additional manufacturer information restricting the use of the measuring device.

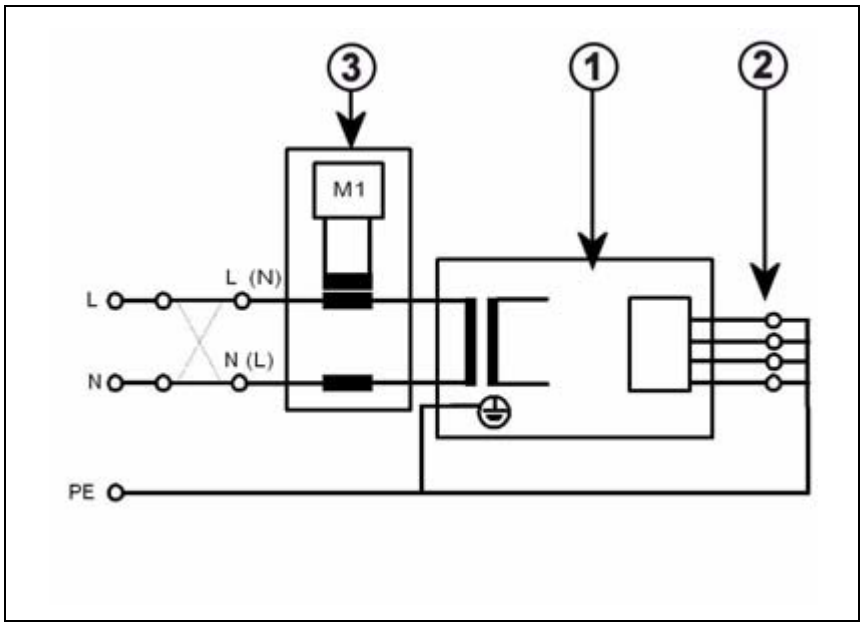

Fig. 2: Measuring circuit for measuring the system leakage current according to the differential current method in compliance with DIN VDE 0751-1/2001-10, Fig. C6 for protection class I.

Pos. 1 = System

Pos. 2 = Application part type B (if available)

Pos. 3 = Measurement setup (integrated into measuring device)

If the direct measurement of the leakage current is used (measurement setup according to (Fig. 3 / p. 15)), the system must be insulated during the measurement and must not be touched.

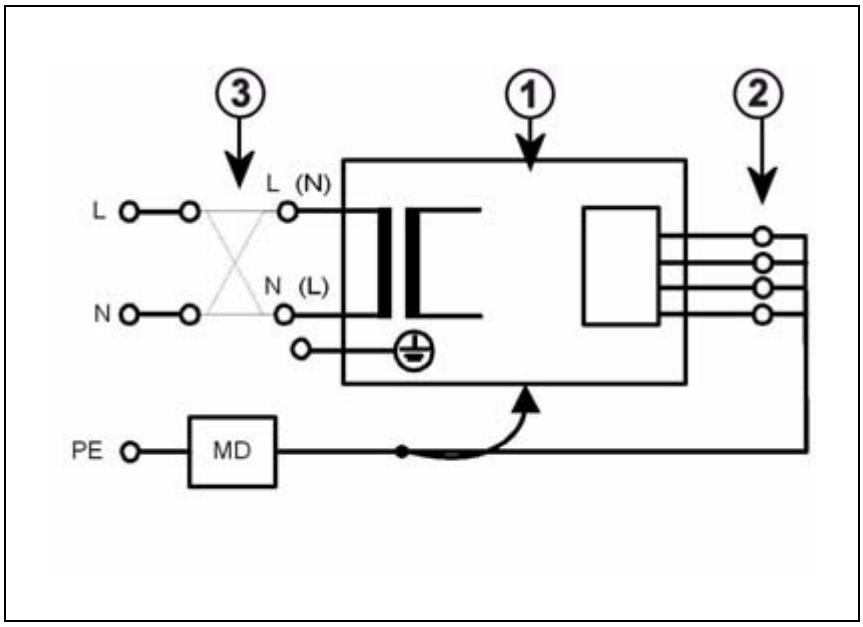

Fig. 3: Measuring circuit for direct measurement of the system leakage current in compliance

with DIN VDE 0751-1/2001-10, Fig. C5 for protection class I.

Pos. 1 = System

Pos. 2 = Application part type B (if available)

Pos. 3 = Measurement setup (integrated into measuring device)

⚠WARNING

Electrical voltage!

Non-compliance can lead to severe injury and even death.

- ➪ **No housing parts of the system may be touched during direct measurement of the leakage current (measurement setup according to (Fig. 3 / p. 15)).**
- ➪ **Third-person access to the system must be prevented.**

The system must be switched on during measurement. Measuring devices with automated measuring sequences must therefore be set to manual measurement.

Enter the highest value as the first measured value in the system leakage current protocol.

This value must not exceed the permissible leakage current values according to DIN VDE 0751-1/2001-10, Table F.1, row "system leakage current for units according to remarks 1 and 3" of

2.5 mA.

Measure and record the current line voltage. If the measured line voltage deviates from the nominal voltage, correct the measured value to the value corresponding to a measurement at the nominal value of the line voltage. This must also be documented.

Document the measuring procedure (differential measurement or direct measurement) and the measuring device used (designation and serial number).

Separate the protocol sheet from these instructions and attach it to the protocols already in the system binder or log book.

Repeat measurement

When maintenance or repair work is performed on the primary power supply circuit (e.g. repairs to the power-on circuit or replacement of the line filter), the system leakage current measurement must be repeated.

The same measuring conditions as in the first measurement apply.

Record and evaluate the highest value determined in the repeat measurement in the existing leakage current protocol.

This value must not exceed the permissible leakage current values according to DIN VDE 0751-1/2001-10, Table F.1, row "system leakage current for units according to remarks 1 and 3" of

2.5 mA.

Measure and record the current line voltage. If the measured line voltage deviates from the nominal voltage, correct the measured value to the value corresponding to a measurement at the nominal value of the line voltage. This must also be documented.

Document the measuring procedure (differential measurement or direct measurement)

and the measuring device used (designation and serial number).

NOTE

For evaluation purposes, the first measured value and the values documented during previous maintenance or safety checks must be compared to the measured values. A sudden or unexpected increase in the measured values may indicate that a fault has occurred in the primary power supply circuit (insulation damage, damage from moisture, defective interference suppressor, etc.) - even if the limit value of 2.5 mA is not exceeded.

Tools, aids (partially for IQ test)

•	Tool kit	97 02 457 Y1971
•	Dynamic test kit	37 90 156 X1963
•	Copper filter set	44 06 120 RV090
•	Densitometer	97 02 416 Y1996
•	Radiation filter set (incl. 25 mm Al)	97 98 596 G5321
•	Resolution test	28 71 820 RE999
•	Safety tester (leakage current and ground wire testing device) e.g., Unimed 1100	51 38 727 Y0766

Note on the log book

The log book is located in the monitor cart behind the keyboard. It is accessible if the cover on the back of the monitor cart is removed.

Notes on adapting the power plug to local conditions.

The customer can have the power plug on the supplied power cable replaced with an appropriate local plug by an electrician, provided that:

- The power plug used can conduct the power required for the operation of the ARCADIS Avantic (refer to current and voltage values stated on the line voltage label, back of monitor cart).
- The required line internal resistance is reached (refer to ARCADIS Avantic Planning Guide).
- The selectivity of the fuse protection is assured - according to the relevant national standards.

It must also be ensured by the customer that connection to an unsuitable power supply is prevented (e.g., by identification or design measures).

As concluding measures, perform and document protective conductor measurements (in Germany, e.g., in the medical device book).

Note on the power connection

The system delivery state is provided by the power connection values on the the line voltage label (back of the monitor cart).

Necessary adjustments to local conditions are to be performed as required according to the adjustment instructions of the ARCADIS Avantic system.

The system leakage current measurement guidelines must be observed.

⚠WARNING

Electrical voltage!

Non-compliance can lead to severe bodily injury and even death.

- ➪ **The internal uninterruptible power supply of the system (UPS) provides several components with line voltage - even when the system is switched off or the system power plug is disconnected.**
- ➪ **Before the system is programmed to the local line voltage/line frequency, it must be disconnected from the power supply (the power plug must be disconnected) and the voltage output plug of the UPS must be disconnected as well.**

Power Connection

Measuring the local line voltage

- Measure the voltage and frequency at the intended outlet for the ARCADIS Avantic system.
- Compare the measured line voltage with the line voltage label on the back of the monitor cart.

  ➪ The measured voltage (+/- tolerance) has to correspond to the voltage read from the label.

Adapting the programmed system line voltage

NOTE

Perform this procedure only if the on-site line voltage does not correspond to the programmed line voltage of the system delivered.

NOTE

After the line voltage is adapted, the leakage current values recorded in the system test protocol are no longer valid.

After closing all covers and successfully performing a protective conductor test, repeat and document the device leakage current measurement.

Observe the leakage current measurement instructions in the "General Information" chapter of these instructions.

⚠WARNING

Danger high voltage!

Disregarding safety precautions can result in death or serious bodily injury.

➪ **Before the line voltage is adapted, the power plug on the UPS in the monitor cart must be pulled out, since the monitor cart is not free of voltage after the power plug is pulled out.**

- Remove the back and bottom covers (Fig. 4 / p. 24) from the monitor cart.
- Pull the power plug out of the UPS in the monitor cart.
- Adapt the voltage by changing the connections to transformers T1 and T2. Refer to the ARCADIS Avantic wiring diagram.

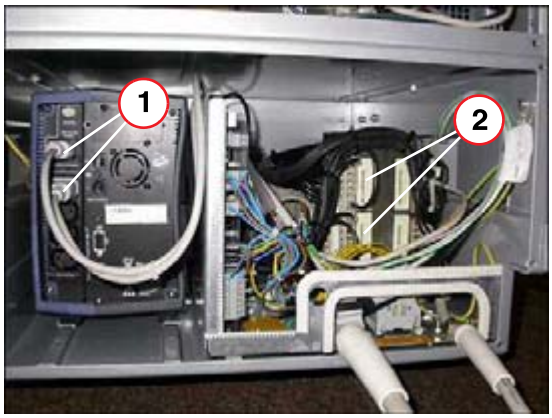

Fig. 4: Monitor cart line voltage

Pos. 1 Power plug

Pos. 2 T1 and T2

Function check of the EMERGENCY STOP switches

- Connect the system to the voltage and boot it.
- Click "Emergency" for the patient registration.
- Activate the EMERGENCY STOP switch on the C-arm.
- The safety switch moves audibly and the following message appears on the lower left monitor edge: "The emergency stop has been pressed"
- Disengage the EMERGENCY STOP switch.
- The safety switch moves audibly and the following message appears on the lower left monitor edge: "The emergency stop switch has been released."
- Document the function of the EMERGENCY STOP switch in the "Test protocol, C-arm movement and emergency stop" (C-arm movement and emergency stop / p. 60).

Functional checks

Operating the ARCADIS Avantic, refer to the Operator Manual

- Stand and C-arm system movements
- Semi-transparent slot and iris diaphragm in fluoroscopy procedure.

- Collimation of the semi-transparent slot and iris diaphragm using fluoroscopy procedure.
- Mechanical functions of the monitor cart

Functional test of C-arm lift movement and parking brakes

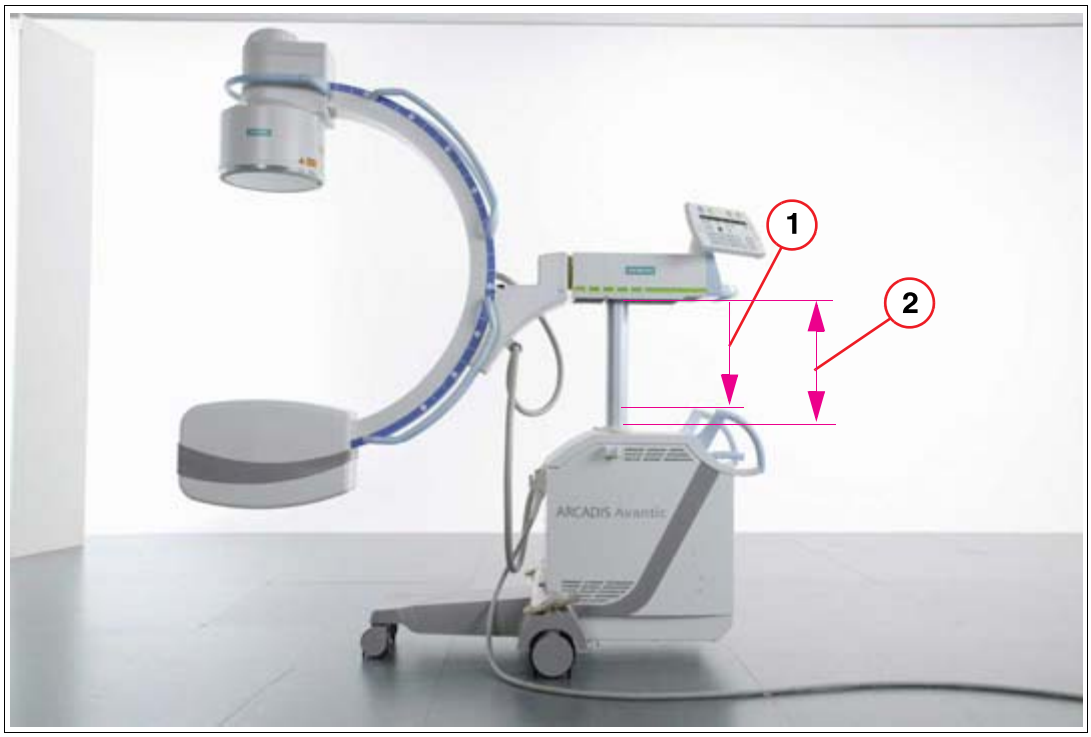

Fig. 5: Function test

- Switch on the main system (C-arm).
- To move the C-arm downward, press the downward button.
- The lifting column moves to position 1 (1/Fig. 5 / p. 27) and remains there automatically. A stop signal (3 beeps) sounds simultaneously.
- To lower the lifting column further, press the downward button once again.
- The lifting column can then be moved by a further 7cm to the lowest point, position 2 (2/Fig. 5 / p. 27). In this area a signal (3 beeps) sounds for safety reasons each time the downward button is pressed.
- To move the C-arm upward, press the upward button. No signal sounds in this case.
- When both switches are pressed, the lifting motor moves in the initially selected direction.
- Loosen the different parking brakes and apply them again. Secure blocking of the relevant movement must be assured.
- Document the function of the C-arm movements, brakes and warning signals in the test protocol, "C-arm movement and emergency stop" .

System configuration

Note regarding Hibernation Mode

NOTE

Hibernation Mode

With the introduction of the Hibernation Mode, system configuration changes are not applied if the system is switched off and then switched on again using the power buttons on the monitor cart.

To correctly apply the modified data, perform a system shutdown.

Open the <Options> - <End Session> menu and click the "Shutdown system" button. Immediately thereafter, press the Power off button on the monitor cart.

The system shuts down and switches off automatically.

Customer and country-specific configurations

- Please clarify in advance with the customer whether the following system configurations are required.

Service login:

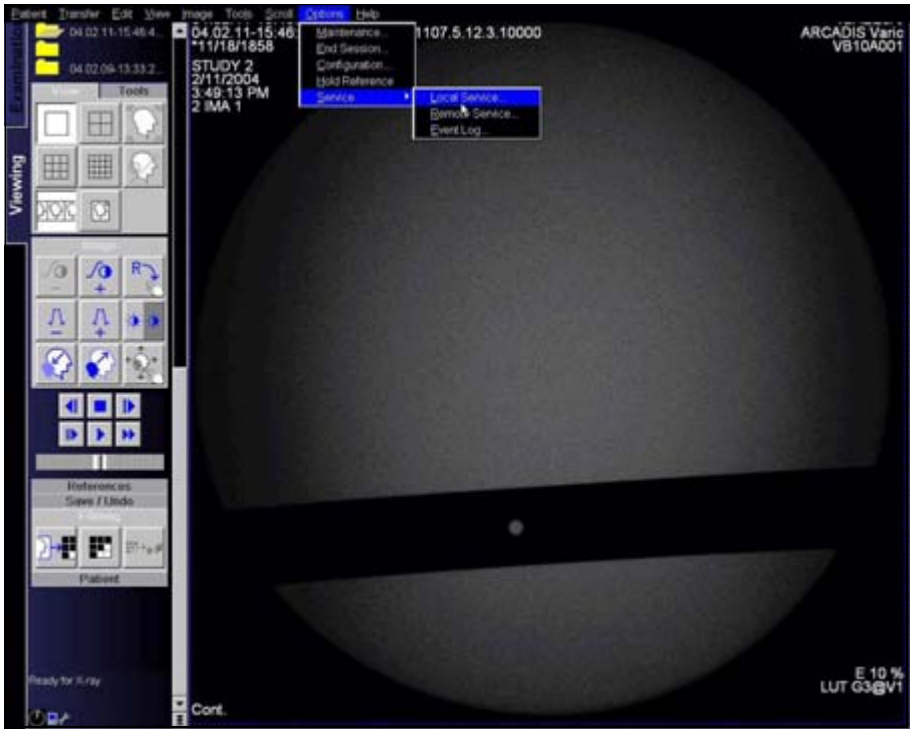

Fig. 6: Service login

- Select **<Options> <Customer service> <Local service>**.

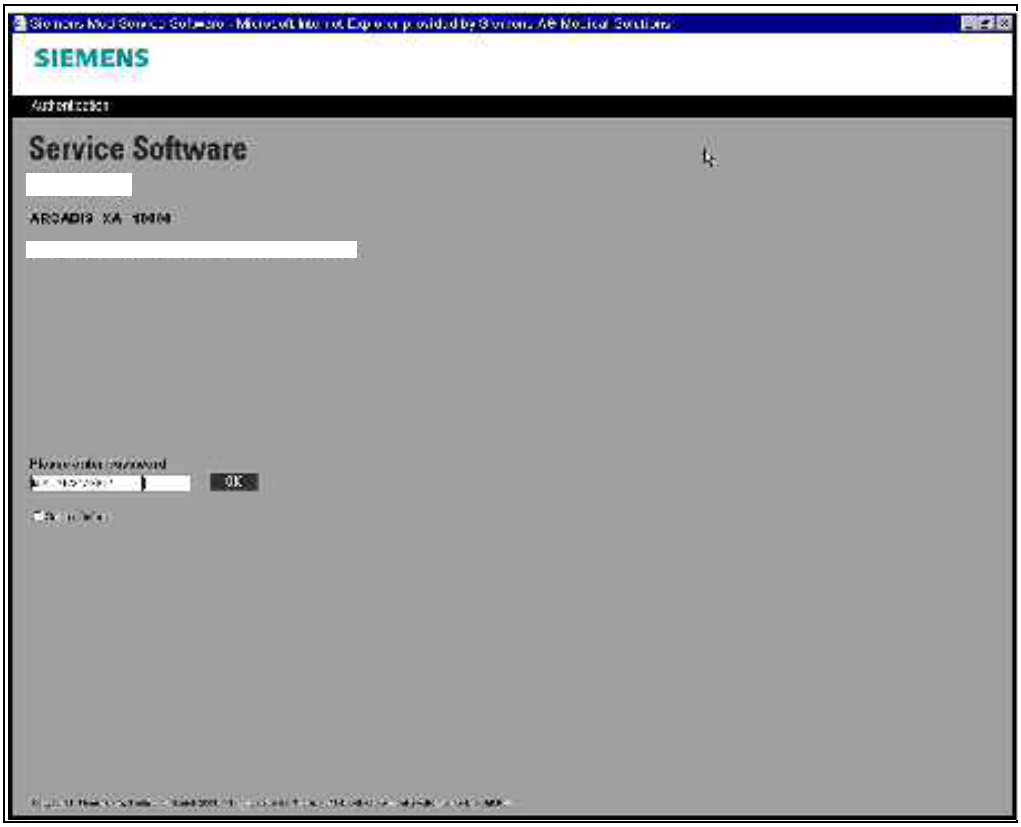

*Fig. 7: Authentication_*

- Enter the 6-character password and click **OK** (see system folder for password).

Customer address configuration

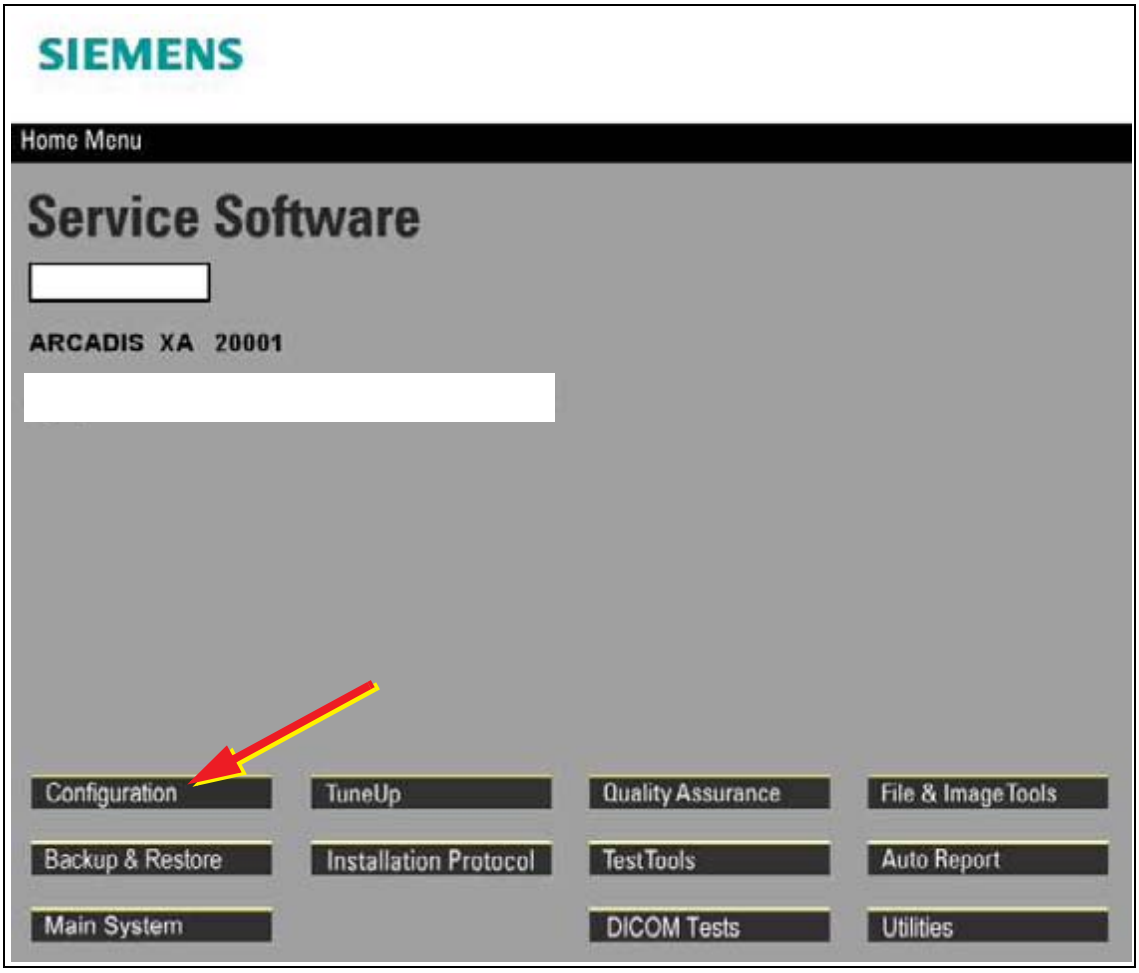

*Fig. 8: Configuration_*

- Select **<Configuration>**.

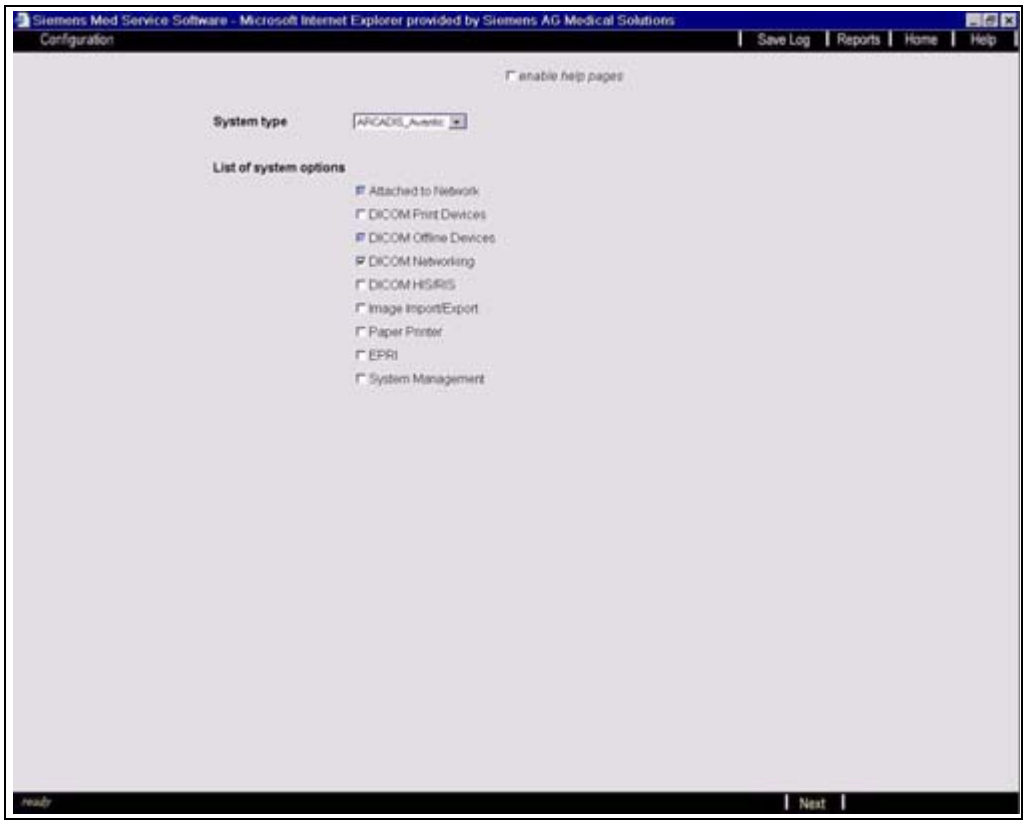

Fig. 9: Configuration

- Click **<Next>**.

Fig. 10: Local Host

- Click **<Site Info>**.

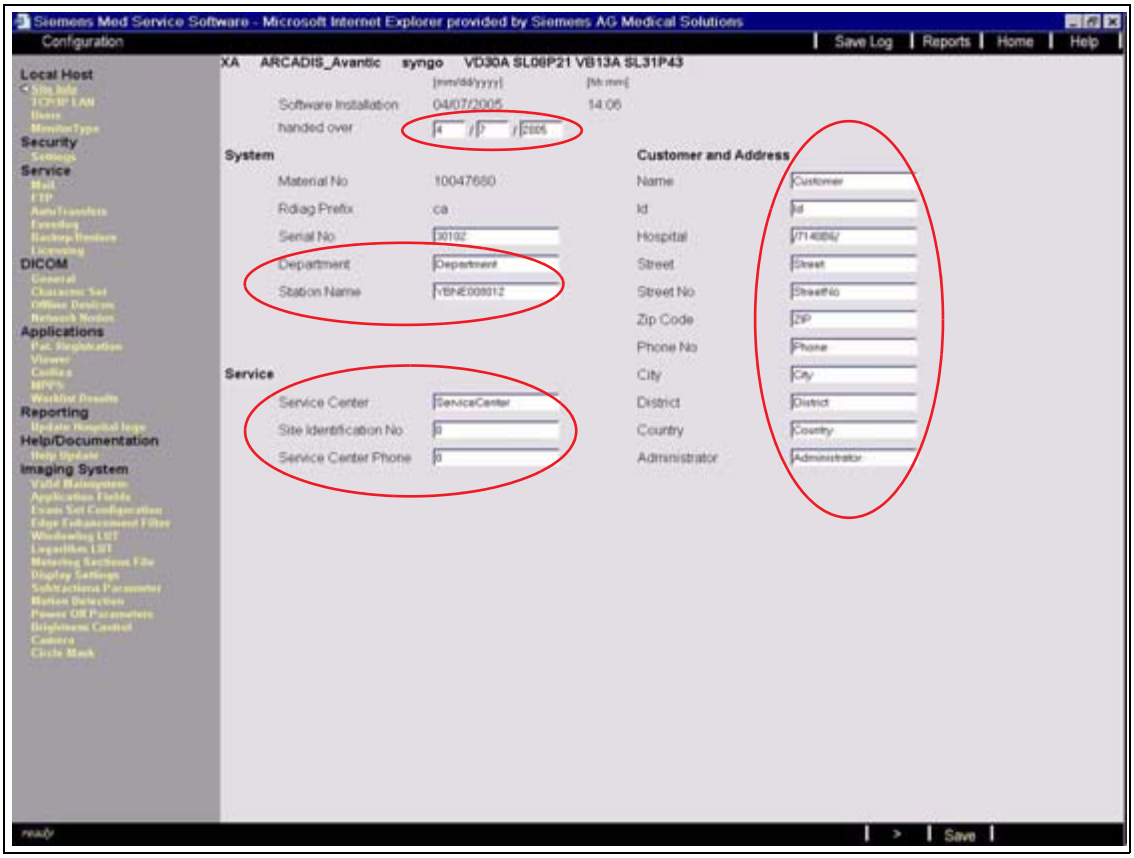

Fig. 11: Site info

- The marked customer-specific data may be adapted. Do not change "Serial No.".
- Click **<Save>**.
- Click **<Home>**.

Main system configuration

- In the service software, select "Main System".

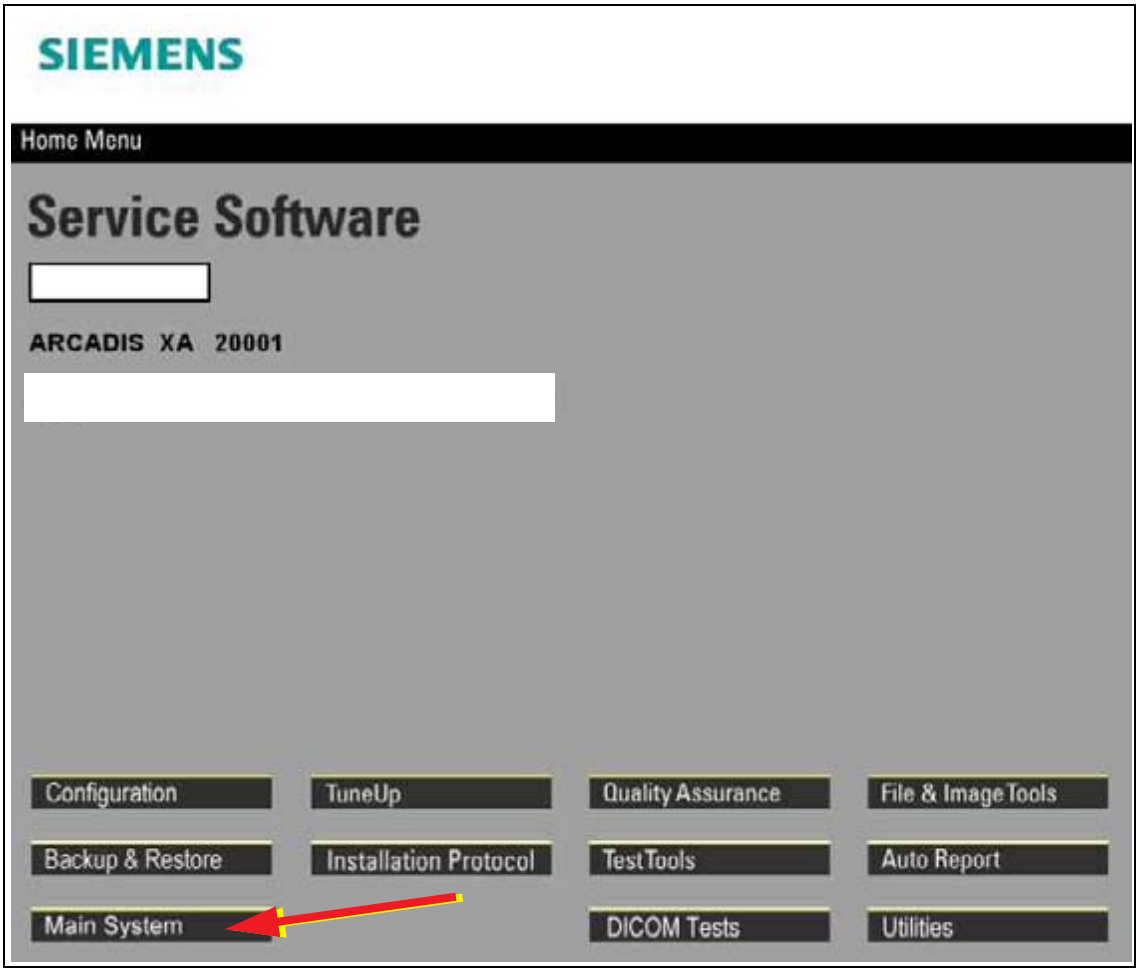

Fig. 12: Main_system

- Click **<Main system>**.

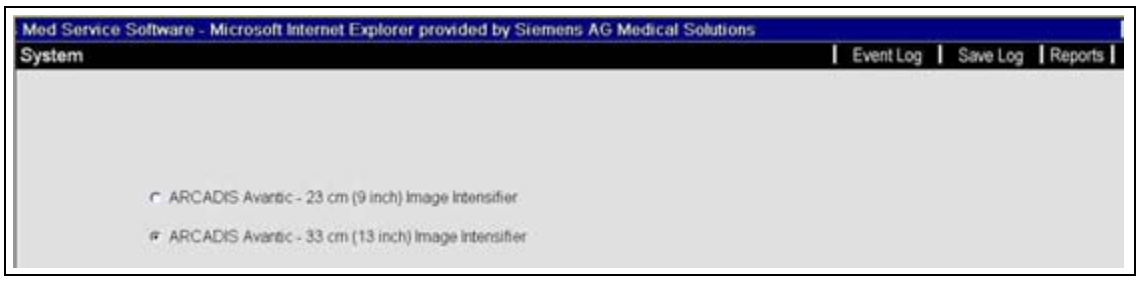
Med Service Software - Microsoft Internet Explorer provided by Siemens AG Medical Solutions
System
Event Log
Save Log
Reports
ARCADIS Avantic - 23 cm (9 inch) Image Intensifier
ARCADIS Avantic - 33 cm (13 inch) Image Intensifier

Fig. 13: Mainsys start

- Select ARCADIS Avantic - I.I. type and click **<Next>**.

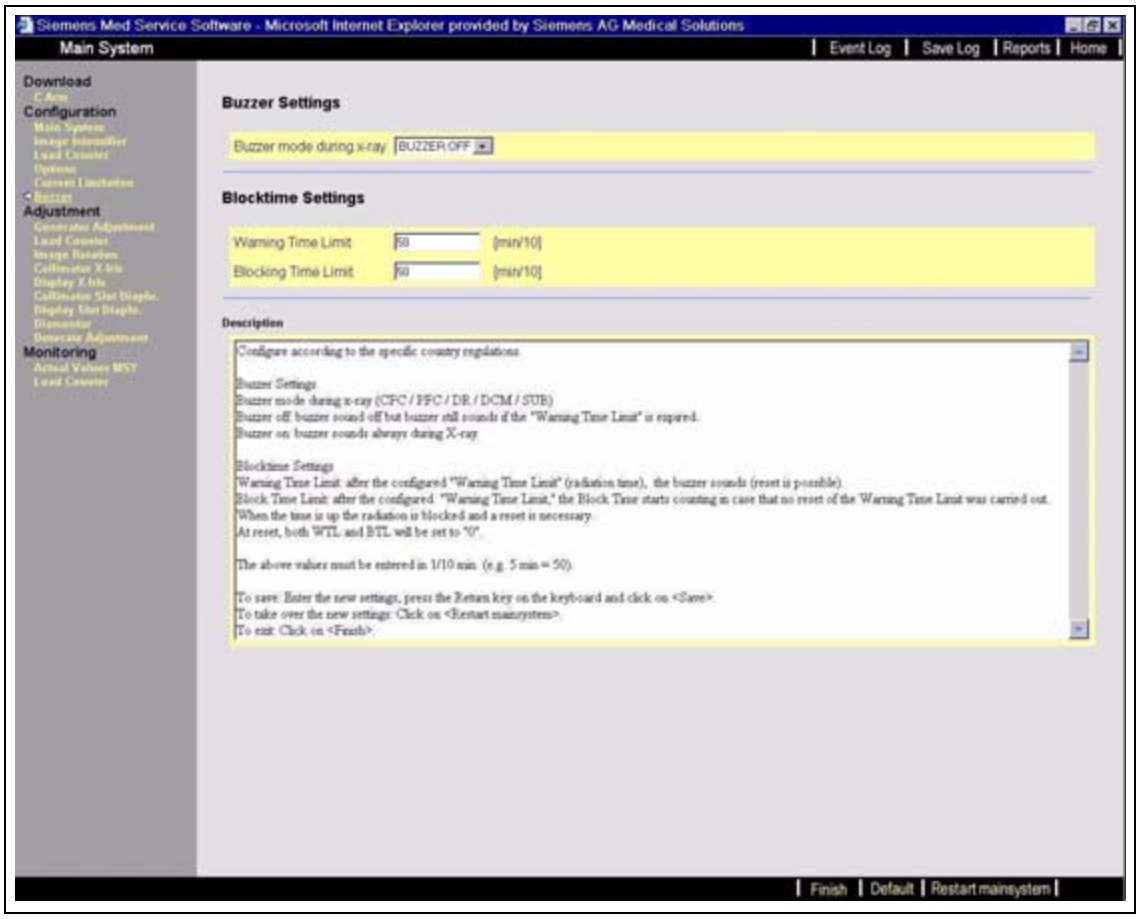
Siemens Med Service Software - Microsoft Internet Explorer provided by Siemens AG Medical Solutions
Main System
Event Log
Save Log
Reports
Home
Download
Configuration
Adjustment
Monitoring
Buzzer Settings
Buzzer mode during x-ray
BUZZER OFF
Blocktime Settings
Warning Time Limit
Blocking Time Limit
[min/10]
Description
Configure according to the specific country regulations
Buzzer Settings
Buzzer mode during x-ray (CFC / FFC / DR / DCM / SUB)
Buzzer off: buzzer sound off but buzzer still sounds if the "Warning Time Limit" is expired.
Buzzer on: buzzer sounds always during X-ray
Blocktime Settings
Warning Time Limit: after the configured "Warning Time Limit" (radiation time), the buzzer sounds (reset is possible).
Block Time Limit: after the configured "Warning Time Limit," the Block Time starts counting in case that no reset of the Warning Time Limit was carried out.
When the time is up the radiation is blocked and a reset is necessary.
At reset, both WTL and BTL will be set to "0".
The above values must be entered in 1/10 min. (e.g. 5 min = 50).
To save: Enter the new settings, press the Return key on the keyboard and click on <Save>.
To take over the new settings: Click on <Restart mainsystem>.
To exit: Click on <Finish>.
Finish
Default
Restart mainsystem

Fig. 14: Buzzer setting

- Under Configuration click **<Buzzer>**.

Make changes according to the following description:

- **Block time settings**
  - **Warning time limit:** The buzzer sound starts when the entered radiation time has elapsed.
  - **Block time limit:** After the entered radiation time has elapsed - without reset of the "warning time limit" - the radiation is blocked the next time it is selected. Every reset of "Warning Time Limit" also resets the "Block Time Limit" to "0".
- **Buzzer mode (indirect, I.I.)**
  - **Buzzer off:** Buzzer sound off. Exceptions: Push mode and "Warning Time Limit" has ended.
  - **Buzzer on:** Buzzer sound always during radiation.

The country-specific regulations must be observed for the max. fluoroscopy time and radiation blockage.

Factory setting:

	"Warning time limit"	"Blocking time limit"
USA Service mask input in 1/10 min.	5 min. 50	0 min. 0
Europe Service mask input in 1/10 min.	5 min. 50	10 min. (5 min. + 5 min.) 50

- Make country-specific changes and click **<Save>**.
- Click **<Home>**.
- Perform a system shutdown.
- Switch on the system and wait for the system to boot.

NOTE

With the introduction of the Hibernation Mode, system configuration changes are not applied if the system is switched off and then switched on again using the power buttons on the monitor cart.

To correctly apply the modified data, perform a system shutdown.

Open the <Options> - <End Session> menu and click the "Shutdown system" button. Immediately thereafter, press the Power off button on the monitor cart.

The system shuts down and switches off automatically.

- If a change is made to the fluoro time, check this function.

Fluoroscopy footswitch configuration.

NOTE

The footswitch is set at the factory so that fluoroscopy is performed with the left pedal and the freely-selectable operating modes such as digital radiography, SUB, etc., are performed with the right pedal. The setting can be changed to meet customer requirements.

Program the footswitch as follows.

- Start service program and log in as described under "Service Login".
  Select Main System / Configuration / Main System / Footswitch CFC / right.
- Save the changes with <Save>.
- Click on <Home> button.
- Perform a system shutdown.
- Switch on the system and wait for the system to boot.

NOTE

With the introduction of the Hibernation Mode, system configuration changes are not applied if the system is switched off and then switched on again using the power buttons on the monitor cart.

To correctly apply the modified data, perform a system shutdown.

Open the <Options> - <End Session> menu and click the "Shutdown system" button. Immediately thereafter, press the Power off button on the monitor cart.

The system shuts down and switches off automatically.

NOTE

Once the configuration has been changed, the label affixed to the footswitch has to be removed and replaced by the new label included in the delivery volume. In the case of an "enhanced" footswitch, there are two labels on the pedals that have to be replaced.

- Remove the label affixed to the footswitch. In the case of an "enhanced" footswitch, remove both labels from the pedals.
- If necessary, remove any remaining adhesive where the labels were removed.
- Affix the new label to the footswitch. In the case of an "enhanced" footswitch, affix both labels to the pedals.
- If the footswitch configuration was changed, check the footswitch pedal function.
  - ➪ The footswitch pedal functions have to correspond to the functions indicated on the newly affixed label(s).

Country-specific adaptation of the maximum tube current

NOTE

A maximum tube current limit is required - as far as known - only in Denmark.

- Start service program and log in as described under "Service Login".

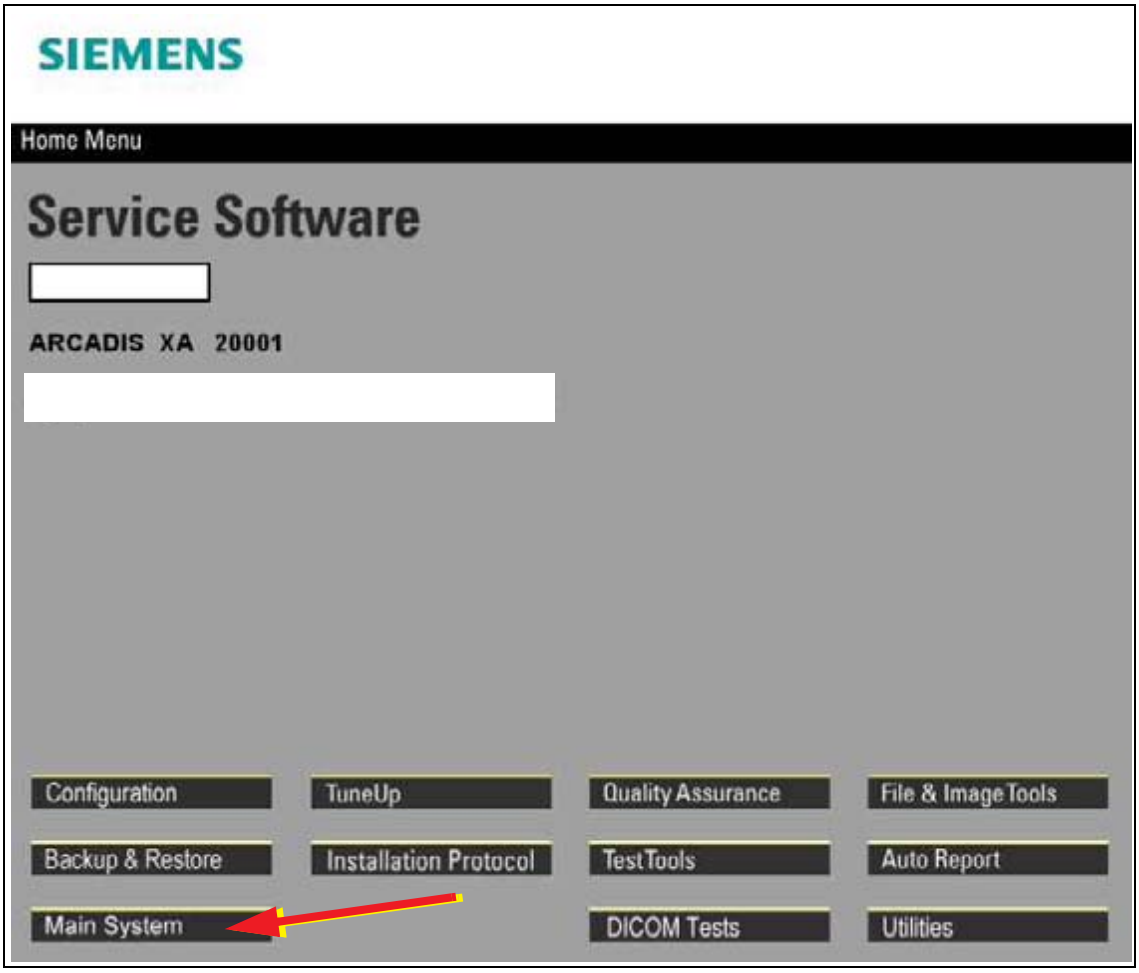

Fig. 15: Main_system

- Click **<Main system>**.

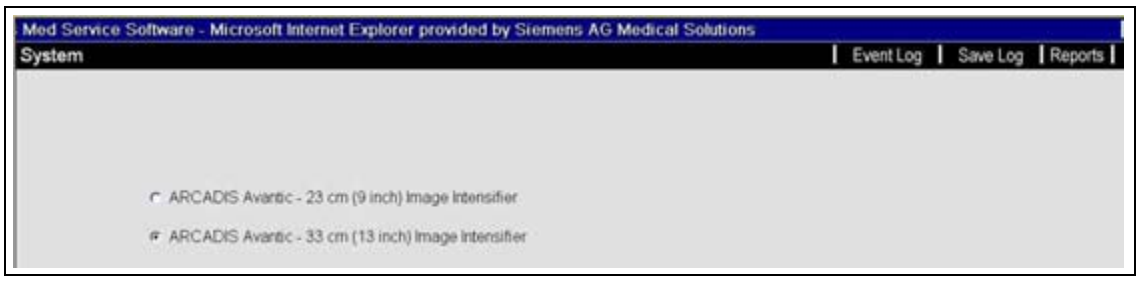
Med Service Software - Microsoft Internet Explorer provided by Siemens AG Medical Solutions
System
Event Log
Save Log
Reports
ARCADIS Avantic - 23 cm (9 inch) Image Intensifier
ARCADIS Avantic - 33 cm (13 inch) Image Intensifier

Fig. 16: Mainsys start

- Select ARCADIS Avantic - I.I. type and click **<Next>**.

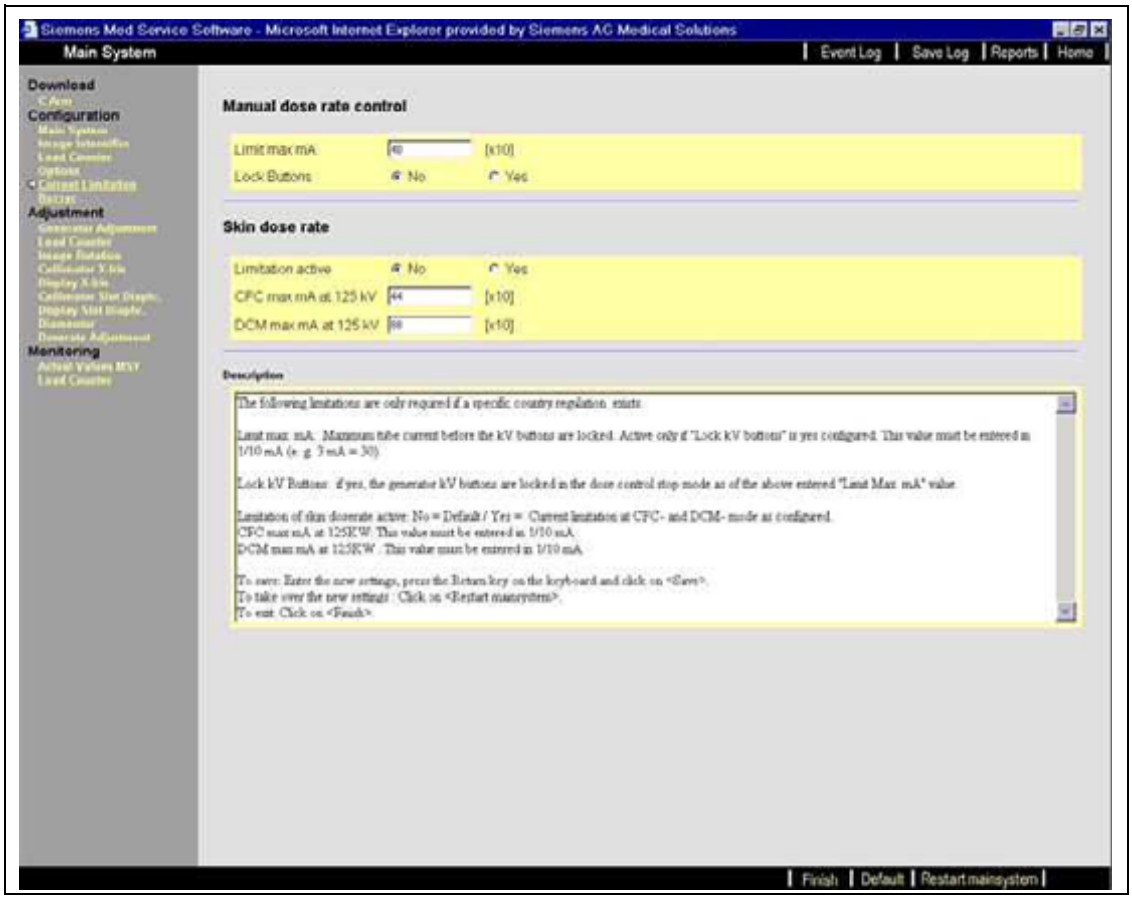

Fig. 17: Current limitation

- Click **<Current limitation>**.
- Make country-specific changes (only Denmark) and click **<Save>**.
- Click **<Home>**.
- Perform a system shutdown.
- Switch on the system and wait for the system to boot.

NOTE

With the introduction of the Hibernation Mode, system configuration changes are not applied if the system is switched off and then switched on again using the power buttons on the monitor cart.

To correctly apply the modified data, perform a system shutdown.

Open the <Options> - <End Session> menu and click the "Shutdown system" button. Immediately thereafter, press the Power off button on the monitor cart.

The system shuts down and switches off automatically.

Configuring the network (optional) and remote service

- Configure the network according to the Configuration Guide, SPR2-310.843.01.01.xx.xx and the remote connection according to Installation, Siemens Remote Service, SP00-000.816.02.01.xx.xx.

NOTE

With the introduction of the Hibernation Mode, system configuration changes are not applied if the system is switched off and then switched on again using the power buttons on the monitor cart.

To correctly apply the modified data, perform a system shutdown.

Open the <Options> - <End Session> menu and click the "Shutdown system" button. Immediately thereafter, press the Power off button on the monitor cart.

The system shuts down and switches off automatically.

Backup

NOTE

A backup must be created following software installation, every software update, and every system adjustment.

NOTE

After a backup group has been successfully burned to CD, the following message is displayed: "Please insert medium in CD-RW in order to continue."

Confirm this message with "OK".

This does not require a new CD.

- Select "Backup & Restore" in the Service Software Home Menu.
- Place the backup CD (located in the monitor cart service compartment) in the CD-ROM drive.

Fig. 18: Backup & Restore_Command

- Select the **<Backup>** command.

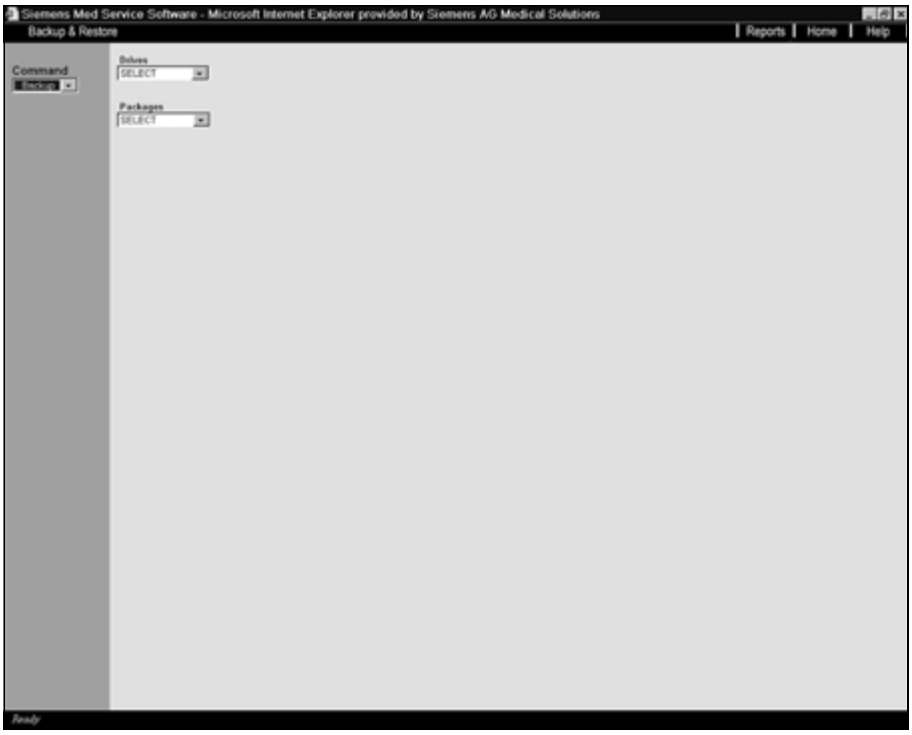

Fig. 19: Backup & Restore_Command_Backup

- Select the respective drive under Drives.
  - Save to CD-ROM (standard save).

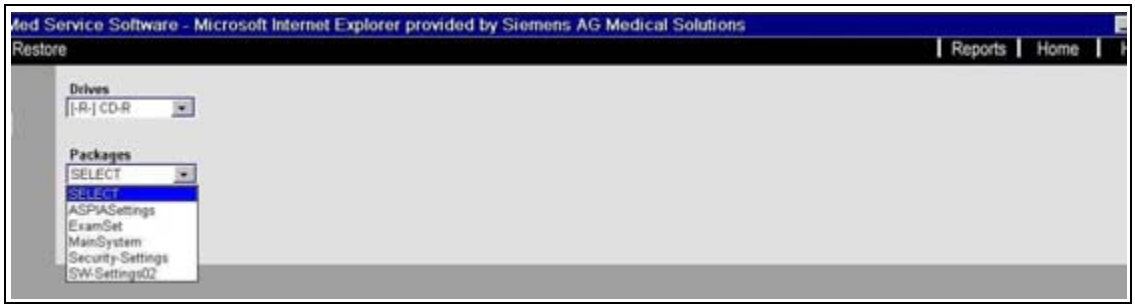

Fig. 20: Backup

SW - Settings02

- Select "SW-Settings02" under Packages.

- Click **<Go>** and wait until the message “Ready” appears in the footer.

Fig. 21: Backup & Restore_Command_Backup_SW-Settings02

ASPIA settings

- Select "ASPIA settings" under Packages.
- Click **<Go>**
  - Wait until "Ready” is displayed in the footer.

Exam set

- Select "ExamSet" under Packages.
- Click **<Go>**
  - Wait until "Ready” is displayed in the footer.

Security settings

For systems with HIPAA configuration

- Select "Security-Settings" under Packages.
- Click **<Go>**
  - Wait until "Ready” is displayed in the footer.

Main system

- Select "MainSystem" under Packages.
  - Wait until "Ready” is displayed in the footer.

Exiting backup

- Close the window via **<Home>**.
- Remove the backup CD-ROM from the CD-ROM drive.

- Store the CD-ROM with the other system documentation.

NOTE

It is not possible to perform a backup of the database (patient images)!

Store the patient images in an archive.

Saving to CD-ROM as a long-term archive is prohibited.

Paper printer (optional)

NOTE

If a paper printer was ordered with the system, all mechanical work and programming was performed at the factory.

In the case of paper printers delivered after the system, they have to be installed and started up in accordance with the Installation and Setting instructions SPR2-310.814.03...

Codonics printer 1660L

Perform the following steps according to the "User Manual" of the printer:

- Transport instructions (see preface).

  Note: Unpack the printer and remove the two transport pins. Place the printer in the cart, connect the power cable and the 25-pin plug to the printer (cables are ready for use in the printer slot of the cart), and set the power switch to "1".

- Install the print media>(SPR2-310.815.01 / General Start-up)

NOTE

Keep the transport safety materials. They are required when replacing or shipping the printer.

Sony printer UP-D72 X

Perform the following steps according to the user manual for the printer (CD-ROM):

- Unpack the printer.
- Fill the paper tray with paper (follow instructions on paper package).
- Plug in the USB cable.
- Print a test page after the automatic test.
- Follow the instructions on the CD-ROM from the manufacturer in the event of problems.

Sony Printer UP-970 and UP-990

Perform the following steps according to the user manual for the printer (CD-ROM):

- Unpack the printer.
- Fill the paper tray with paper (follow instructions on paper package).
- Plug in the USB cable.
- Print a test page after the automatic test.
- Follow the instructions on the CD-ROM from the manufacturer in the event of problems.

Final Work Steps

IQ test

Perform IQ test according to instructions SPR2-330.820.01.xx.xx.

➪ Remove the supplied IQ test protocols from the monitor cart service compartment.

Completing protocols

After completing all adjustment work steps and check measurements, the responsible technician must sign and date the test protocols and country-specific protocols to confirm that all values have been correctly determined and recorded.

Protective conductor resistance test

Transferring the values from the test protocol to the "protective conductor" protocol

NOTE

If no covers were opened while installing the system and no additional components (e.g. options) were installed or modified, the values recorded in the test protocol 1 can be transferred as the first measured value.

The protective conductor test need not be performed.

Perform the protective conductor resistance test if the conditions specified above do not apply.

Refer to the section "Protective conductor resistance test during start-up (if necessary)".

- Complete the "Protective Conductor Resistance" protocol found in the "Protocol" section of this manual.
- If the system test protocol only contains the confirmation of the protective conductor resistance threshold, enter this value in the "Protective conductor resistance" table, row "Measurement point 1", column "First measured value" (< 0.18 Ohm). Enter "n.a." in rows "measurement point 2" through "measurement point 22" of column "First measured value."
- If the system test protocol specifies the measured protective conductor resistance values and their measurement points, transfer the values to rows "Measurement point 1" through "Measurement point 22" of column "First measured value". Mark empty fields with "n.a." as "not applicable".
- In row "(1) Meas. circuit", column "First measured value", enter the text "VDE0751-1 Image C2".

- If specified in the system test protocol, read off the measuring equipment used at the factory for the protective conductor test.
  - ➪ Enter this measuring equipment in the "Protective conductor resistance" protocol, in the "Measuring device, type:" row.
- If specified in the system test protocol, read off the identification of the measuring equipment specified in the test protocol.
  - ➪ Enter the ID of the measuring equipment in the "Protective conductor resistance" protocol, in the "Measuring device, Ser. No.:" row.
- Mark the following rows in the "Protective conductor resistance" protocol with "n.a." as "not applicable":
  - ➪ Row "Meas. inst. calibrated up to:"
  - ➪ Row "Evaluation:"
- Complete the following rows in the "Protective conductor resistance" protocol:
  - ➪ In the row "Date:" enter the current date.
  - ➪ In the "Name" row, enter your name in block letters.
  - ➪ Sign the protocol in the "Signature" row.
- If you want to complete the protocol with additional remarks, enter them in the "Remarks" table in the protocol addendum.

Protective conductor resistance test during start-up (if necessary)

NOTE

If covers were opened while installing the system and/or additional components (e.g. options) were installed or modified, the protective conductor resistance value recorded in system test protocol 1 is invalid.

The protective conductor resistance test has to be performed after closing all covers.

NOTE

Observe the instructions for the protective conductor resistance test in the "General Information" chapter of these instructions.

- Perform the protective conductor resistance test.
  - ➪ The protective conductor resistance must not exceed 0.2 ohms at any measurement point.
- Complete the "First measured value" column of the "Protective conductor resistance" protocol.
- If you want to complete the protocol with additional remarks, enter them in the "Remarks" table in the protocol addendum.

Tab. 6 Measurement points for the protective conductor resistance measurement

Measurement points
Measurement from the protective conductor connection of the power plug to the:
Base unit, handle attachment screw for I.I. cover
Base unit, one attachment screw at I.I. grid
Base unit, one attachment screw at I.I. flange
Base unit, one attachment screw at I.I. cap
Base unit, one attachment screw at POWERPHOS
Base unit, one screw at cover of horizontal carriage
Base unit, one lateral screw at brake pedal (left or right)
Base unit, back cover (electronics box)
Base unit, equipotential bonding connection
Base unit, near footswitch cable outlet (electronics box)
Base unit, one lifting column screw at the base plate of the electronics box
Base unit, base plate of electronics box (at unpainted location)
Base unit, one screw at the back of each monitor
Monitor cart, one screw at monitor support
Monitor cart, one screw at the small, top back cover
Monitor cart, one screw at the large, lower back cover
Monitor cart, one screw at back cover of switch-on assembly
Monitor cart, one screw at the front cover
Monitor cart, one screw at the right side cover
Monitor cart, one screw at the left side cover
Monitor cart, one screw at the right handle
Monitor cart, one screw at the left handle

Leakage current measurement

Transferring the values from the test protocol to the "device leakage current" protocol

NOTE

If the programmed line voltage has not been changed from its status at delivery, and there have been no changes of parts in the system's primary circuit, the device leakage current value specified in the test protocol delivered with the system is valid.

The device leakage current test need not be performed.

The value recorded in the test protocol must be used as the "first measured value" in the "Device Leakage Current" protocol.

Perform the device leakage current measurement if the conditions specified above do not apply.

Refer to the section "Device leakage current measurement during start-up (if necessary)".

- Complete the "Device leakage current" protocol found in the "Protocol" section of this manual.
- Enter the system serial number on the "Serial Number" row of the "Device leakage current" protocol.
- If applicable, enter the customer-specific system ID number in the "Customer-specific ID Number" row of the "Device leakage current" protocol.
- In test protocol 1, table "Alternative leakage current measurement (DIN VDE 0751)" or "Device leakage current measurement (DIN VDE 0751-1), read off the higher recorded value between rows "Leakage current under normal operation and with nominal voltage" and "Leakage current with power reversion of polarity and nominal voltage."
  - ➪ Enter the higher value from test protocol 1 in the "Device leakage current" protocol, row "Device leakage current (highest measured value) [mA]" and in row "Device leakage current corrected value [mA]", column "First measured value".
- Read off the line voltage in test protocol 1 under "Revision Level".
  - ➪ Enter the value from test protocol 1 in the "Device leakage current" protocol, row "Line voltage during measurement [V~]", column "First measured value".
- Read off the production resources entered in test protocol 1, table "Production resources used".
  - ➪ Enter the production resources from test protocol 1 in the "Device leakage current" protocol, row "Measuring device: type", column "First measured value".
- Read off the measuring device ID entered in test protocol 1, table "Production resources used".
  - ➪ Enter the measuring device ID from test protocol 1 in the "Device leakage current" protocol, row "Measuring device, ser. no.", column "First measured value".
- In "Device leakage current" protocol, row "(1) Meas. circuit", column "First measured value", enter the text "VDE0751-1 Image C5".

- Mark the following rows in the "Device leakage current" protocol, column "First measured value", with "n.a." as "not applicable":
  - ➪ Row "Meas. inst. calibrated up to:"
  - ➪ Row "Evaluation:"
- Complete the following rows in the "Device leakage current" protocol, column "First measured value":
  - ➪ In the row "Date:" enter the current date.
  - ➪ In the "Name" row, enter your name in block letters.
  - ➪ Sign the protocol in the "Signature" row.
- If you want to complete the protocol with additional remarks, enter them in the "Remarks" table in the protocol addendum.

Device leakage current measurement during start-up (if necessary)

NOTE

If the programmed line voltage has been changed from its status at delivery, and/or there have been changes of parts in the system's primary circuit, the device leakage current value specified in test protocol 1 delivered with the system is no longer valid.

The device leakage current measurement has to be performed.

NOTE

Observe the leakage current measurement instructions in the "General Information" chapter of these instructions.

⚠WARNING

Electrical voltage!

Non-compliance can lead to severe injury and even death.

- ➪ **The system leakage current measurement may be performed on systems of protection class I only after the protective conductor test has been passed.**

- Perform the device leakage current measurement after successfully completing the protective conductor test.
- Complete the "First measured value" column of the "Device leakage current" protocol.
- If you want to complete the protocol with additional remarks, enter them in the "Remarks" table in the protocol addendum.

Completing the "ARCADIS Avantic Installation" protocol.

The manufacturer of this product requires information and the legislator demands proofs that a product delivered free of defects from the factory continues to possess the required and certified quality properties on installation and start-up.

It is therefore absolutely necessary that the installation report with the installation and start-up data is sent without delay after completion of the work to the address stated on the installation report.

You will find the report in the system folder.

Protective Conductor Resistance

System: ARCADIS Avantic

Material no.: 10048590

Serial number: .....

Customer-specific ID number .....

Tab. 7

	Protective Conductor Resistance						
	First measured value	Repeat measurement values					
Meas. point 1:							
Meas. point 2:							
Meas. point 3:							
Meas. point 4:							
Meas. point 5:							
Meas. point 6:							
Meas. point 7:							
Meas. point 8:							
Meas. point 9:							
Meas. point 10:							
Meas. point 11:							
Meas. point 12:							

	Protective Conductor Resistance						
	First measured value	Repeat measurement values					
Meas. point 13:							
Meas. point 14:							
Meas. point 15:							
Meas. point 16:							
Meas. point 17:							
Meas. point 18:							
Meas. point 19:							
Meas. point 20:							
Meas. point 21:							
Meas. point 22:							
(*1) Meas. circuit:							
Measuring device, type:							
Meas. device ser. no.:							
Meas. inst. calibrated up to:							
Evaluation:	n.a.						
Date:							
Name:							
Signature							

(*1) Meas. circuit. See (Fig. 22 / p. 54)

Measuring circuit

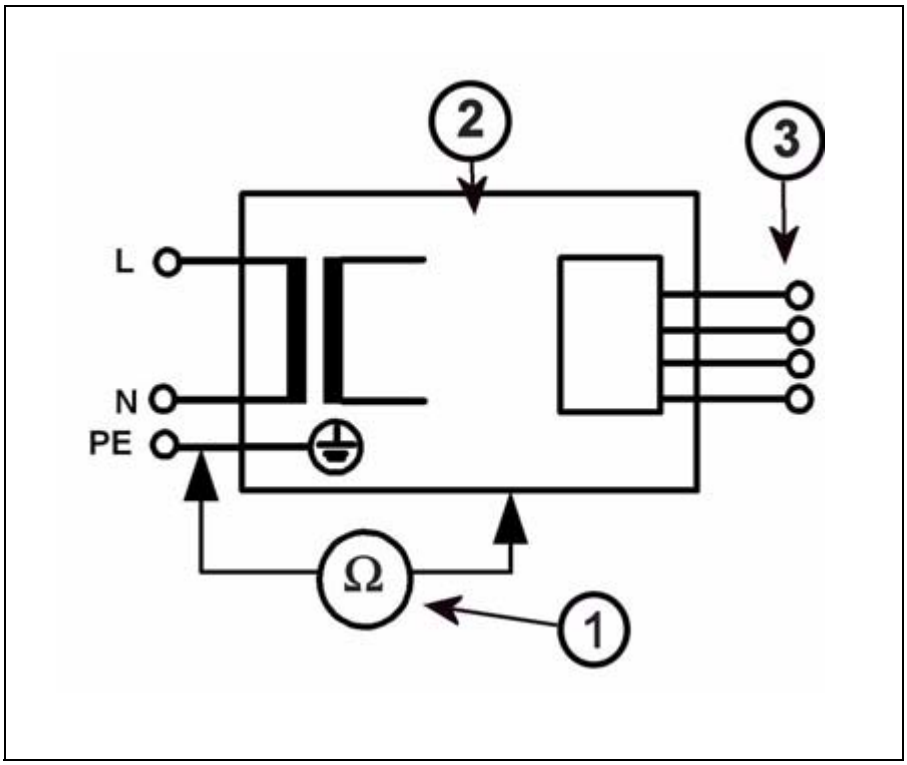

Fig. 22: Measuring circuit for measuring the protective conductor resistance for units that are disconnected from power, in compliance with DIN VDE 0751-1/2001-10, Fig. C2.

Pos. 1 Measurement setup (measuring device)

Pos. 2 System

Pos. 3 Application part (if applicable)

Remarks:

Tab. 8

Date	Comments	Name	Signature

Date	Comments	Name	Signature

System leakage current

System:	ARCADIS Avantic
Material no.:	10048590
Serial number:	.....
Customer-specific ID number	.....

Tab. 9

System leakage current						
	First measured value	**Repeat measurement values**				
System leakage current (Highest measured value) [mA]						
Line voltage during the measurement [V~]						
System leakage current Corrected value [mA]						
(*1) Meas. circuit:						
Measuring device, type:						
Meas. device ser. no.:						
Measuring device, calibrated to:						
Evaluation:						
Date:						
Name:						
Signature:						

(*1) Meas. circuit: See (Fig. 23 / p. 57) through (Fig. 26 / p. 58),

Measuring circuit

Direct measurement

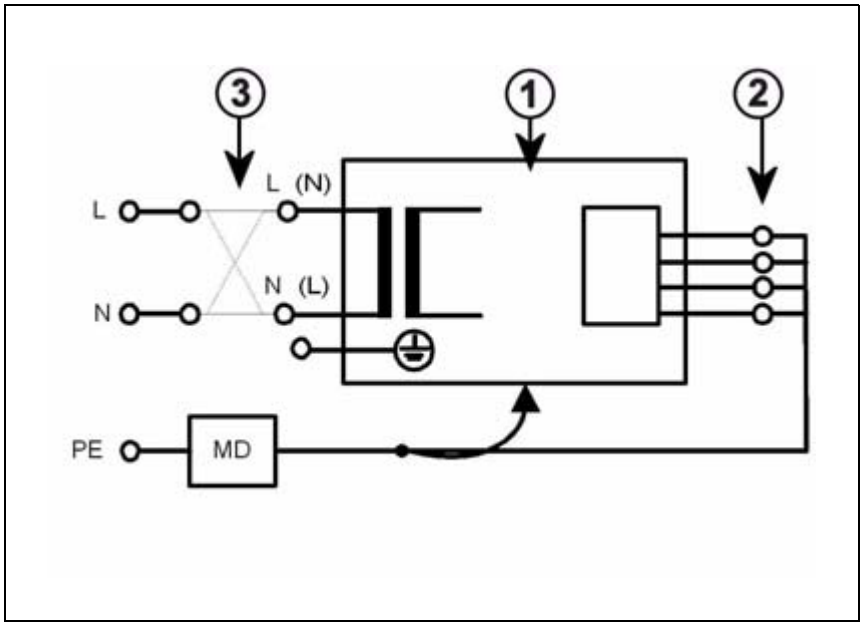

Fig. 23: Measuring circuit for direct measurement of the system leakage current in compliance with DIN VDE 0751-1/2001-10, Fig. C5 for protection class I.

Pos. 1 = System

Pos. 2 = Application part type B (if available)

Pos. 3 = Measurement setup (integrated into measuring device)

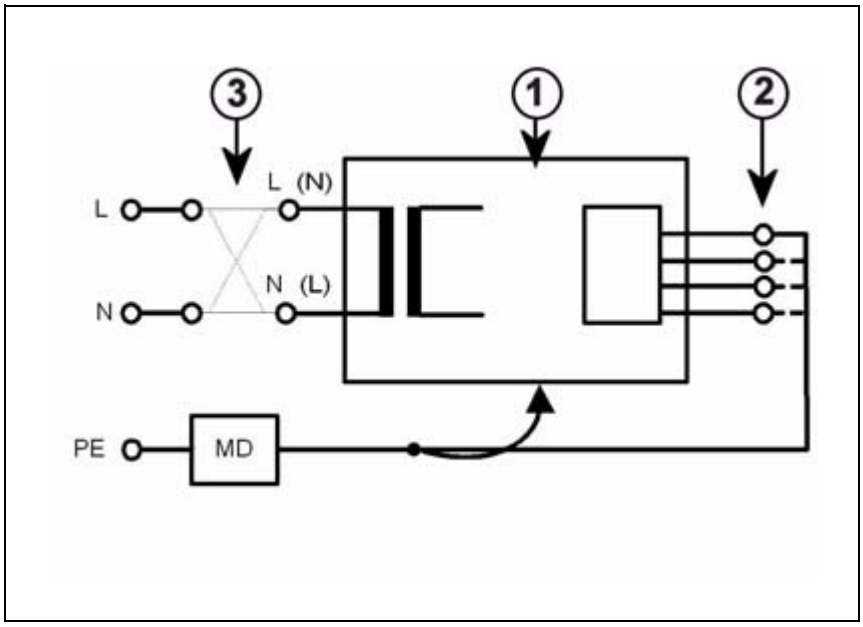

Fig. 24: Measuring circuit for direct measurement of the system leakage current in compliance with DIN VDE 0751-1/2001-10, Fig. C5 for protection class II.

Pos. 1 = System

Pos. 2 = Application part (if applicable)

Pos. 3 = Measurement setup (integrated into measuring device)

Differential measurement

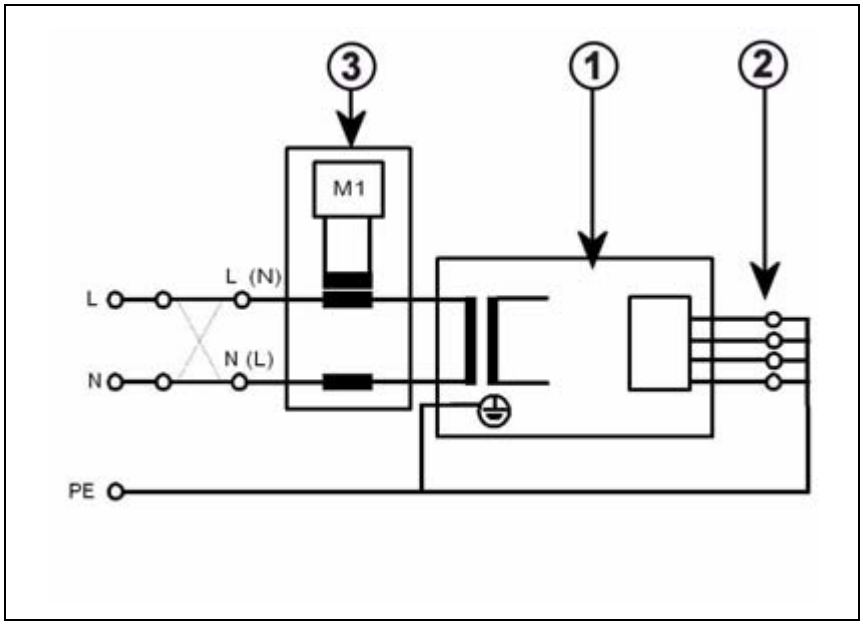

Fig. 25: Measuring circuit for measuring the system leakage current according to the differential current method in compliance with DIN VDE 0751-1/2001-10, Fig. C6 for protection class I.

Pos. 1 = System

Pos. 2 = Application part type B (if available)

Pos. 3 = Measurement setup (integrated into measuring device)

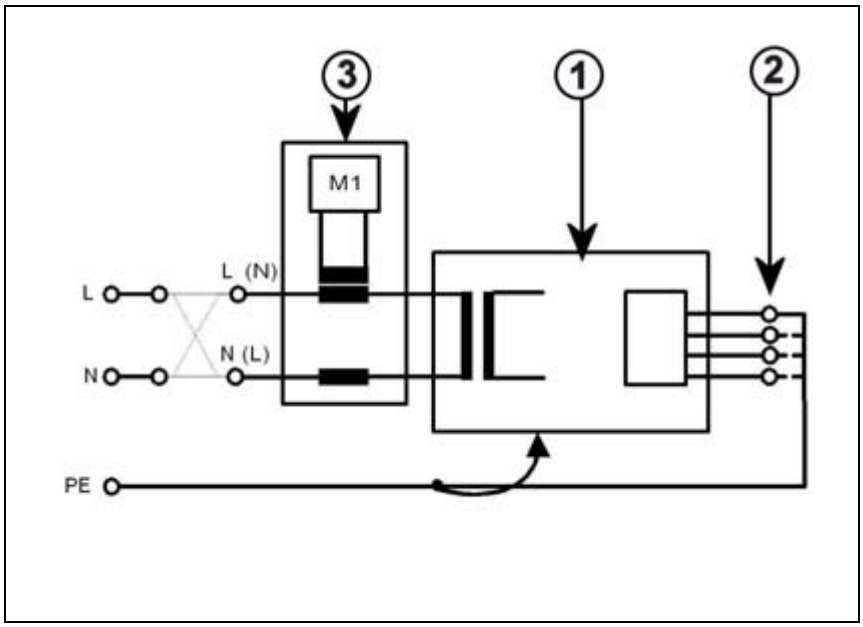

Fig. 26: Measuring circuit for measuring the system leakage current according to the differential current method in compliance with DIN VDE 0751-1/2001-10, Fig. C6 for protection class II.

Pos. 1 = System

Pos. 2 = Application part (if applicable)

Pos. 3 = Measurement setup (integrated into measuring device)

Remarks:

Tab. 10

Date	Comments	Name	Signature

C-arm movement and emergency stop

System: ARCADIS Avantic

Material no.: 10048590

Serial number: .....

Customer-specific ID number .....

Tab. 11 C-arm movement and emergency stop protocol

Movement	**OK** **Yes/No**	**Name**	**Date**	**Initials**
Releasing/locking the brakes				
Downward movement, position 1				
Downward movement, position 2				
The warning signals sound as described.				
Function, EMERGENCY_STOP_button				

Network checklist

System:	ARCADIS Avantic
Material no.:	10048590
Serial number:	.....
Customer-specific ID number	.....

Network checklist (1+) For SAP order no.:_____

Will the system have a network connection (HIS/RIS, Camera, PACS)? **Yes** **No**

Mandatory for image system with network connection!

To ensure that the system is preconfigured at the factory and thus optimize installation at the customer site, we request that you complete and return this list if a network connection is available (and used).

Person responsible for network configuration at customer site

Name:	
Phone/fax:	
E-mail:	

System network data

Tab. 12 System network data

		Not networked
Identification:		
Computer name		* Configuration/Local Host/TCP IP address
IP address:		
TCP/IP address		* Configuration/local host/TCP IP address
Subnet mask		* Configuration/local host/TCP IP address
Gateways		* Configuration/local host/TCP IP address
General: Local AE title for:		
HIS/RIS		* Configuration/DICOM/General
Study transfer		* Configuration/DICOM/general

Print		* Configuration/DICOM/general
Comments		

Network data for HIS/RIS network partner (only with HIS/RIS option)

Tab. 13 Network data for HIS/RIS

		Not available
Device:	**Version:**	**Manufacturer:**
Host properties:		
Host name		* Configuration/DICOM/HIS RIS nodes
TCP/IP address		* Configuration/DICOM/HIS RIS nodes
General Node Properties		
Logical name		* Configuration/DICOM/HIS RIS nodes
Application entity		
AE title		* Configuration/DICOM/HIS RIS nodes
Port number		* Configuration/DICOM/HIS RIS nodes
Comment:		

Network checklist (2+)

Network data for diagnostic console/archive system (only with DICOM Basic option) (1)

Tab. 14 Network data for reporting console/archiving system

Information on each:	**Reporting console/ Archive system**	**Not available**
Product:	**Version:**	**Manufacturer:**
Host properties:		
Host name		* Configuration/DICOM/network nodes
TCP/IP address		* Configuration/DICOM/network nodes
General node properties:		
Logical name		* Configuration/DICOM/network nodes
Application entity:		
AE title		* Configuration/DICOM/network nodes
Port number		* Configuration/DICOM/network nodes

Supported Dicom Services			
Storage	yes	no	* Configuration/DICOM/network nodes
Storage commitment	yes	no	* Configuration/DICOM/network nodes
	Node name:		* Configuration/DICOM/network nodes
Query	yes	no	* Configuration/DICOM/network nodes
Retrieve	yes	no	* Configuration/DICOM/network nodes
Comment:			

Network data for diagnostic console/archive system (only with DICOM Basic option) (2)

Tab. 15 Network data for reporting console/archiving system

Information on each:	**Reporting console/ Archive system**		**Not available**
Product:	**Version:**		**Manufacturer:**
Host properties:			
Host name			* Configuration/DICOM/network nodes
TCP/IP address			* Configuration/DICOM/network nodes
General node properties:			
Logical name			* Configuration/DICOM/network nodes
Application entity:			
AE title			* Configuration/DICOM/network nodes
Port number			* Configuration/DICOM/network nodes
Supported Dicom Services			
Storage	yes	no	* Configuration/DICOM/network nodes
Storage commitment	yes	no	* Configuration/DICOM/network nodes
	Node name:		* Configuration/DICOM/network nodes
Query	yes	no	* Configuration/DICOM/network nodes
Retrieve	yes	no	* Configuration/DICOM/network nodes
Comment:			

Network checklist (3-)

Network data for a DICOM camera in the network (only with the DICOM Print option) (1)

Tab. 16 Network data for DICOM camera in the network

Information for	**Any camera**		**No camera available**
Device:	**Version:**		**Manufacturer:**
Default camera	yes	no	
Host properties:			
Host name			* Configuration/DICOM/Print devices
TCP/IP address			* Configuration/DICOM/Print devices
General node properties:			
Logical name			* Configuration/DICOM/Print devices
Application entity:			
AE title			* Configuration/DICOM/Print devices
Port number			* Configuration/DICOM/Print devices
Comment:			

Network data for a DICOM camera in the network (only with the DICOM Print option) (2)

Tab. 17 Network data for DICOM camera in the network

Information for	**Any camera**		**No camera available**
Device:	**Version:**		**Manufacturer:**
Default camera	yes	no	
Host properties:			
Host name			* Configuration/DICOM/Print devices
TCP/IP address			* Configuration/DICOM/Print devices
General node properties:			
Logical name			* Configuration/DICOM/Print devices
Application entity:			
AE title			* Configuration/DICOM/Print devices
Port number			* Configuration/DICOM/Print devices
Comment:			

Section	Changes
Specific system settings	The specification for the buzzer setting for the USA was changed as follows: Warning time limit: changed from "45" to "50" Blocking time limit: changed from "5" to "0"